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AUTHOR Arnold, Richard D.
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ABSTRACT

In the Neurological Impress Method (NIM) for helping children with reading problems, the teacher and student read aloud together while the child points with an index finger to the words that are being spoken. The system thus provides visual, auditory, and kinesthetic-tactile input for learners. A review of the scant information on NIM reported in the literature reveals that positive findings predominate but that more data are needed. The purpose of the study reported in this paper was to compare the effectiveness of NIM to the Language Experience Approach (LEA) in tutoring children at a remedial reading clinic. Thirty-two children were randomly assigned to one of three groups: an NIM group, an LEA group, or a control group receiving no special remediation. Within each one-hour tutoring period, each child received 15 minutes of instruction in the assigned experimental Procedures. Instruction was conducted three times per week for three months. Analysis of the findings revealed that there were no statistically significant differences among the treatment groups but that children did show evidence of growth in reading achievement as a result of tutoring. (GW)

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NEUROLOGICAL IMPRESS--GOOD NEWS OR BAD?

Richard D. Arnold
Purdue University

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NEUROLOGICAL IMPRESS--GOOD NEWS OR BAD?*

Richard D. Arnold**

Purdue University

In the early sixties R. G. Heckleman, working in a suburb north of San Francisco, devised a new method called Neurological Impress for helping children with reading problems. He reported very impressive improvement for the students involved in his studies (1966, 1969) -- an average of two years, and up to three and a half years gain in reading in about three months.

The method was originally designed for older students two to three years behind in reading, who are at least of borderline-average intelligence or above. The method is supposed to provide correct reading patterns for students. These patterns then become deeply impressed on the neurological system involved in learning to read. Impressions are supposed to be heightened through the use of multisensory input, with the senses involved being visual, auditory and kinesthetic-tactile. These multiple inputs are to provide a strong learning signal. The two feedback systems vital to the success of the neurological impress method are auditory (attained through unison oral reading), and visual-kinesthetic-tactile feedback (provided by the index finger). Critical to

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the effectiveness of the method is that the two systems work exactly together. Therefore, the index finger must always be pointing to the word that is being spoken.

One additional point of information might be added to the rationale. Recently, it has been suggested (Cooper and Petrosky, 1976) that from a psycholinguistic point of view, the NIM may be a good technique to use to get children to sense the holistic nature of reading as versus isolated skills. NIM, it is claimed, should be helpful for children who learn separate or discrete reading skills, but can't use the skills in unison or concert.

Briefly, then, the theoretical rational for NIM is to get the sensory systems working together to focus on correct reading patterns and these patterns will be impressed on the proper neurological system involving reading. NIM may also aid students in getting their reading skills together.

The Neurological Impress Method

The basic process of NIM is unison reading where the teacher and student read together, rather rapidly. The positions of the student and teacher are very important. The tutee is slightly in front of the teacher, and both hold the book, usually with their left hands. As they read together, the teacher speaks into the ear of the child. Teacher's voice helps impress the correct reading patterns via the auditory system. The teacher paces the speed of reading; some patterns need to be read more slowly than others. At other times the teacher may read slightly ahead of the child, or she can lag very slightly behind allowing the child to assume the role of pacer. The teacher

also controls the volume of the voices, sometimes assuming auditory-vocal dominance, other times allowing the student to do so. When a student falters, the teacher assumes leadership and increases either speed, volume or both.

Usually the child has his right hand free (unless, of course, he is left-handed) and he uses his index finger as a pointer to the words and patterns. It is imperative that the finger keeps up with the spoken word, otherwise the auditory-vocal systems are out of synchrony with the visual-kinesthetic-tactile systems.

The teacher does not need to prepare for the oral reading sessions, but it seems reasonable to expect her to know the general content to be read and to have some notion of the difficulty levels of the selections. The reading sessions are supposed to be spontaneous. The goal is to cover as many pages of material possible during the alloted period of time. Instructional periods may range from 15 to 60 minutes, with fifteen minutes being recommended.

No other instruction is to be included in the NIM sessions. Teachers are cautioned not to teach sounds or word recognition skills, not to ask comprehension questions, and to avoid pictures and other possible distractions in the text. The focus of the method is on fluent, rapid, oral reading of patterns. Of course, if the child volunteers information or wants to talk about the story, the teachers should accept this, but it should not be encouraged. In contrast, motivation and positive reinforcement techniques are encouraged, especially in terms of improved fluency in oral reading. Naturally, physical comfort is always a matter of concern to a sensitive teacher. Discomforts sometimes associated with this method are tired voice and dry mouth. It is claimed that

after a few practice sessions both teacher and pupil adapt and adjust to this method, and it is a relatively easy procedure to carry out.

Results of NIM Reported by Others

Kaluger and Kolson (1969) report in their book that after having used the method they got results different from Heckelman. They report a success rate of about 50 percent for students having expressive difficulties related to reading. They did not mention success or failure rates for students with other types of reading problems. They did suggest that the method may be helpful for disabled readers who exhibit a wide discrepancy between accuracy in oral reading and comprehension. Based on the information provided by Kaluger and Kolson one could conclude that NIM is helpful for students having problems related to oral reading.

Marion Miller (1969) reported a case study conducted on a nine year old boy with a low average I.Q. He had a speech problem which made a phonics approach ineffective. It was claimed that the boy had emotional problems, too. After about eight weeks of 15 minute periods of NIM training before school, the boy showed over one-half year's growth in oral reading accuracy and over one full year's growth in reading comprehension. It was reported that his emotional development improved and that he frequently took a leadership role in his classroom reading group.

Paul Hollingsworth (1970) reported a study using NIM. He was interested in adapting NIM for normal fourth grade children in the regular classroom. He points out that the method involving a one to one pupil-teacher ratio would be extremely time consuming and would

make impossible demands on the teachers' time and on their voices. Therefore, he modified the method so that eight children at a time could use headphones to follow the taped voice. The teacher monitored the group, seeing that they were following the voice with their oral reading while properly pointing to the words read. He reports that the classroom teacher adjusted nicely to this modified procedure.

The eight children in the experimental group and another eight children in the control group were of average intelligence and were reading at grade level. The experimental procedure involved reading thirty stories, each about 15 minutes long. Ten stories were below grade level, ten at grade level, and ten above grade level. When Hollingsworth compared pretest-posttest gains of the two groups, using analysis of variance, he found no significant differences between the experimental and control groups. He concluded that the one-to-one pupil-teacher ratio may be needed to obtain results like Heckleman, or that the method may be effective with remedial readers and not with children making normal progress.

What can we conclude from the scant information reported in the literature? A brief review of the results are: (1) Heckelman reports impressive gains; (2) Kaluger and Kolson report a 50 percent success rate for certain reading cases involving expressive language deficits; (3) Miller reports success with a nine year old boy with reading problems; and (4) Hollingsworth found NIM to be no better or no worse than regular teaching for normal readers. It is difficult to synthesize these data, even if some faulty research design problems involved in a couple of the studies are ignored. It seems reasonable to conclude that overall, positive findings predominate though more data are needed. That was

the motivation for the present study.

The Present Study

The purpose of the study (Arnold, 1972) was to compare the effectiveness of NIM to the Language Experience Approach (LEA) used for remedial reading. A control group receiving no special remediation was also used. Thirty two students were involved in the study, with about ten students in each group. All children had applied for remedial services at the Purdue Reading Clinic. Prior to receiving the treatment, each child was screened for intelligence and reading achievement. Students were given both the Peabody Picture Vocabulary Test (1959) and the appropriate form of the Raven Progressive Matrices (Raven, 1960, 1965); no student was included who had I.Q. scores of less than 80. Children were also screened for reading with the Wide Range Achievement Test (Jastak and Jastak, 1965). Scores were compared to the criteria established by Kaluger and Kolson to determine whether or not the children should be classified as remedial readers. The 32 children who met the screening requirements were given pre- and post-tests on The Gates-McKillop, Oral Reading subtest (1962), and The Bond-Balow-Hoyt New Developmental Reading Tests (1965) which included several measures of silent reading. The students were then randomly assigned to one of the three treatments. Tutors were mostly graduate students, that is, teachers coming back to Purdue for a Master's degree in Reading. They were enrolled in the first clinic remedial reading course which includes a three hour per week tutoring practicum. They were all trained in both NIM and LEA so they could differentiate between the two methods, thereby improving their skill in the assigned tutoring method. They

were also knowledgeable enough to avoid using the techniques involved in the unassigned method. As with tutees, tutors were randomly assigned to the experimental methods. Supervisors monitored the tutors and assisted when appropriate.

Within the one hour Purdue tutoring period each child received 15 minutes of the experimental procedure. The remaining time was used to teach the child other aspects of reading based on a previous, individual diagnosis. Thus, each child received either NIM or LEA for 45 minutes per week for the tutoring semester. The average time students received the experimental procedure was about seven hours, that which is recommended by Heckelman for NIM.

Analysis of covariance was used to determine the effectiveness of the three treatments. Correlation coefficients of the variables were also calculated. The findings revealed that for every subtest or test score used there were no statistically significant differences found among the treatment groups. On the one measure of oral reading and the eleven measures of silent reading, differences among the groups were not important statistically or educationally. While there were no differences among treatment groups, children did provide evidence of growth in reading achievement as a result of tutoring.

For rough comparison purposes with the Heckelman studies, average growth scores were obtained. It was found that during the three month experimental period the children grew about one year in oral reading, which is less than the two year growth reported by Heckelman for his secondary school students. For the more immature readers, that is those who were given the primary level of the silent reading test, growth was not as evident as for the more mature readers, that is, students

who were given the intermediate level of the silent reading test. On these tests the less advanced readers grew about half a year, while the more advanced students grew a year or so.

Discussion

It can be concluded from this study alone that NIM did produce growth in remedial students, but the method was neither better, nor worse than the other treatments involved. Findings from this study were positive but not as impressive as those reported by Heckelman.

Some tentative educational conclusions can be drawn from this and other studies but more information should be gathered to substantiate them. First, it seems that for groups of reading disabled students, there is probably no one best method of teaching. This implication is consistant with conclusions reached about reading methods in general for groups of normal children.

Second, it appears that certain remedial students respond better to NIM than do others. Our poorest response was three month's gain while the best response was 1.8 year's gain. This suggests certain children probably need to be assigned to NIM for maximum growth, and that certain other children need to be assigned to different remedial techniques to maximize their learning. All this points to a very significant factor -- the need for individual diagnosis for disabled readers.

Third, it seems that NIM is probably more effective with students who are not having fundamental reading problems. It does not seem logical that this treatment would be helpful for children needing basic decoding skill development. NIM is probably most helpful for students who are having problems with oral reading accuracy, fluency and the

like. Kaluger and Kolson support this notion when they talk about the method being successful for cases with expressive language problems.

Fourth, it seems probable that older students, in general, may respond better to NIM than younger pupils. This may be related to the issue of the presence or non-presence of fundamental reading problems. That is, in general, older students will not have fundamental reading problems as often as younger children.

Fifth, NIM seems to produce growth in silent reading comprehension, perhaps as much or more than growth in oral reading accuracy. If true, the method may be useful for a psycholinguistic approach to reading instruction.

Finally, no evidence or opinion has accrued which suggests that NIM is an ineffective remedial technique. Therefore, it seems unreasonable to be critical of neurological impress as a teaching technique. Perhaps as more is learned about the method a stronger endorsement may be possible. Neurological impress, good news or bad? The answer seems to be "some of each."

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